291
Ch 10
Test Review

Key p571 1-8, 11, 12, 13-27 odd, 28, 29
p570 63-65
p568 24-27

1. growth
2. difference
3. e
4. $\log_3 2187 = 7$
5. $8^{4/3} = 16$
6. $(0, .4)\ (2, 6.4)$
$y = .4b^x$
$6.4 = .4b^2$
$16 = b^2$
$4 = b$
$y = .4(4)^x$

7. $\frac{\log 5}{\log 3}$
8. $\log_2 \frac{1}{32} = \log_2 2^{-5} = -5$

11. $(3^{\sqrt{8}})^{\sqrt{2}}$
$3^4 = 81$

12. $81^{\sqrt{5}} \div 3^{\sqrt{5}}$
$3^{4\sqrt{5}} \div 3^{\sqrt{5}}$
$3^{3\sqrt{5}}$ or $27^{\sqrt{5}}$

13. $2^{x-3} = \frac{1}{16}$
$2^{x-3} = 2^{-4}$
$x - 3 = -4$
$x = -1$

15. $\log_2 x < 7$
$2^7 > x$
$0 < x < 2^7$
$0 < x < 128$

17. $\log_3 x - 2\log_3 2 = 3\log_3 3$
$\log_3 x - \log_3 4$
$\log_3 \frac{x}{4} = \log_3 27$
$\frac{x}{4} = 27$
$x = 108$

19. $\log_5(8y - 7) = \log_5(y^2 + 5)$
$8y - 7 = y^2 + 5$
$0 = y^2 - 8y + 12$
$(y-6)(y-2)$
$y = 6 \quad y = 2$

21. $7.6^{x-1} = 431$
$(x-1)\log 7.6 = \log 431$
$x - 1 = \frac{\log 431}{\log 7.6}$
$x - 1 = 2.9910$
$x = 3.9910$

23. $3^x = 5^{x-1}$

$x \log 3 = (x-1)\log 5$

$x \log 3 = x \log 5 - \log 5$

$x \log 3 - x \log 5 = -\log 5$

$x(\log 3 - \log 5) = -\log 5$

$x = \dfrac{-\log 5}{(\log 3 - \log 5)}$

$x = 3.1507$

25. $e^{3y} > 6$

$3y > \ln 6$

$y > \dfrac{\ln 6}{3}$

$y > .5973$

27. $\ln 3x - \ln 15 = 2$

$\ln \frac{3x}{15} = 2$

$e^2 = \frac{3x}{15}$

$5e^2 = x$

$36.9453 = x$

28. $y = a(1+r)^t$

$= 25(1+.0325)^{15}$

$y = \$40.39$

p570

63. $y = ae^{kt}$

$738 = 9e^{.872t}$

$82 = e^{.872t}$

$\ln 82 = \ln e^{.872t}$

$4.4067 = .872t$

$5.05 \text{ days} = t$

64. $\frac{1}{2} = 1e^{-k/1800}$

$\ln \frac{1}{2} = \ln e^{-1800k}$

$\ln \frac{1}{2} = -1800k$

$3.851 \times 10^{-4} = k$

$.0003851$

65. $64{,}800 = 45{,}600(1+r)^{10}$

$[1.42105]^{1/10} = (1+r)^{10\cdot 1/10}$

$1.0358 = 1+r$

$.0358 = r$

3.6%

p568

24. 9 25. -5 26. $\frac{1}{4}$ 27. 2

29. $50 = 25(1.0325)^t$

$2 = 1.0325^t$

$\log 2 = t \log 1.0325$

$21.7 = t$

22 yrs